

What is claimed is:

1. A method for producing a ultrafine fiber, comprising:
spinning an island polymer and a sea polymer into a ultrafine fiber.
wherein said island polymer is an polyolefin polymer and said sea polymer has a
5 different dissolving and removing property from that of said island polymer.
2. A method according to claim 1, wherein said island polymer and sea
polymer is spun in a weight ratio ranging from about 5:95 to about 95:5 by a
mixed spinning method or a conjugated spinning method to said fiber.
3. A method according to Claim 1, wherein said island polymer is an
10 polyolefin polymer having a density less than 1.0 g/cm^3 and a flexural modulus
more than 9000 kg/cm^2 .
4. A method according to Claim 1, wherein said island polymer is selected
from the group consisting of polypropylene, polyethylene, ethylene-propylene
copolymer, polyethylene elastomer polymer, and polypropylene elastomer
15 polymer.
5. A method according to Claim 1, wherein said sea polymer is an organic
solvent-soluble polyolefin polymer selected from the group consisting of
polystyrene, polyethylene, and ethylene-propylene copolymer.
6. A method according to Claim 1, wherein said sea polymer is an alkali
20 -soluble polymer selected from the group consisting of sulfonic sodium
containing polyethyleneterephthalate and derivatives thereof.
7. A method according to Claim 1, wherein said sea polymer further
comprises at least one component selected from the group consisting of
para-terephthalic acid, aliphatic dicarboxylic acid, aromatic dicarboxylic acid,
25 aliphatic diol, aromatic diol, carboxylic acid and derivatives thereof.

8. A method according to Claim 1, wherein said sea polymer is a water-soluble polymer selected from the group consisting of polyvinyl alcohol, water-soluble polyester copolymer comprising isopropyl alcohol (IPA), terephthalic acid (TPA), acrylic acid (AA), sulfonic sodium salt (SIP), and polyethyleneglycol.
9. A method for producing a ultrafine fiber substrate, comprising:
- spinning an island polymer and a sea polymer into a ultrafine fiber, wherein said island polymer is an polyolefin polymer and said sea polymer has a different dissolving and removing property from that of said island polymer;
- producing a substrate from said ultrafine fiber; and
- removing said sea polymer from said substrate to obtain said ultrafine fiber substrate.
10. A method according to Claim 9, further comprising a step of immersing said substrate into a polymer prior to removing said sea polymer from said substrate.
11. A method according to Claim 9, further comprising a step of polishing a surface of said substrate surface after removing said sea polymer from said substrate.
12. A method according to Claim 9, wherein said substrate is needle punch nonwoven or water punch nonwoven, weaving, knitting.
13. A method according to Claim 9, wherein said island polymer is an polyolefin polymer having a density less than 1.0 g/cm^3 and a flexural modulus more than 9000 kg/cm^2 .
14. A method according to Claim 9, wherein said island polymer is selected from the group consisting of polypropylene, polyethylene, ethylene-propylene

copolymer, polyethylene elastomer polymer, and polypropylene elastomer polymer.

15. A method according to Claim 9, wherein said sea polymer is an organic solvent-soluble polyolefin polymer selected from the group consisting of
5 polystyrene, polyethylene, and ethylene-propylene copolymer.

16. A method according to Claim 9, wherein said sea polymer is an alkali-soluble polymer selected from the group consisting of sulfonic sodium containing polyethyleneterephthalate and derivatives thereof.

17. A method according to Claim 16, wherein said sea polymer further
10 comprises at least one component selected from the group consisting of para-terephthalic acid, aliphatic dicarboxylic acid, aromatic dicarboxylic acid, aliphatic diol, aromatic diol, carboxylic acid and derivatives thereof.

18. A method according to Claim 9, wherein said sea polymer is a water-soluble polymer selected from the group consisting of polyvinyl alcohol,
15 water-soluble polyester copolymer comprising isopropyl alcohol (IPA), terephthalic acid (TPA), acrylic acid (AA), sulfonic sodium salt (SIP), and polyethyleneglycol.

19. A method according to Claim 9, wherein said island polymer has a fineness from about 0.5 to 0.001 denier per filament after removing said sea polymer from
20 said ultrafine fiber.

20. A method according to claim 9, wherein said island polymer and sea polymer is spun in a weight ratio ranging from about 5:95 to about 95:5 by a mixed spinning method or a conjugated spinning method to said fiber.